

553, 338

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



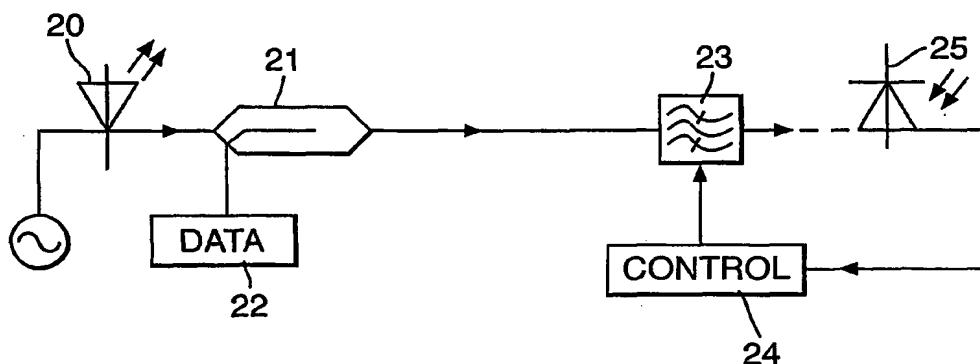
(43) International Publication Date  
4 November 2004 (04.11.2004)

PCT

(10) International Publication Number  
**WO 2004/095752 A1**

- (51) International Patent Classification<sup>7</sup>: **H04J 14/02**
- (21) International Application Number:  
PCT/GB2004/001668
- (22) International Filing Date: 16 April 2004 (16.04.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
0308951.3 17 April 2003 (17.04.2003) GB
- (71) Applicant: **AZEA NETWORKS LTD** [GB/GB]; Bates House, Church Road, Harold Wood, Romford, Essex, RM3 0SD (GB).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **TURITSYN, Sergei** [RU/GB]; School of Engineering and Applied Science, Aston University, Birmingham B4 7ET (GB). **FEDORUK, Mickail** [RU/RU]; Institute of Computational Technologies, Lavrentiev Avenue, 6, Novosibirsk, 630090 (RU). **SHAPIRO, Elena, G.** [RU/RU]; Institute of Automation and Electrometry, Russian Academy of Science, Novosibirsk, 630090 (RU).
- (74) Agent: **GILL JENNINGS & EVERY**; Broadgate House, 7 Eldon Street, London EC2M 7LH (GB).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:  
— with international search report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: DATA FORMAT FOR HIGH BIT RATE WDM TRANSMISSION



(57) Abstract: The invention includes a method for optically encoding data for transmission over a wavelength division multiplexed optical communications system comprising the steps of: generating a periodic series of optical pulses defining a series of time slots, wherein one pulse appears in each time slot; filtering the pulses to produce carrier pulses extending over more than one time slot; and modulating the pulses with data for transmission. Preferably, the filter gives rise to the pulses having a temporal profile with a minimum in the centre of each of the time slots adjacent to the time slot for that pulse. The resulting data format allows for greater spectral efficiency in a WDM optical transmission system as compared with conventional RZ and NRZ data formats.

WO 2004/095752 A1